

Claims

1. A roller bogie for a single sheet feeder, said bogie comprising:

- a) a frame;
- b) a pre-feed roller rotatably supported on said frame;
- c) a single sheet separation roller rotatably supported on said frame; and
- d) roller drive gears rotatably mounted on said frame, and
- e) axially aligned spaced bogie support bearings on said frame,

said bearings being configured for reception in spaced bogie supports in a single sheet feeder.

2. The roller bogie of claim 1, wherein said frame is comprised of a pair of spaced side plates and at least one cross piece interconnecting said side plates, said pre-feed roller and said separation roller being supported between said side plates for rotation about parallel axes.

3. The roller bogie of claim 2, wherein said bogie support bearings are coaxial with said separation roller.

4. The roller bogie of claim 3, further comprising a bogie positioning lever extending from said frame in a direction generally parallel to and spaced from a line connecting the axes of rotation of said rollers.

5. The roller bogie of claim 3, further comprising a gear retainer affixed to one of said side plates, said gears being mounted between said gear retainer and said one side plate.

6. The roller bogie of claim 5, further comprising a pre-feed roller drive gear connected to said pre-feed roller and a pre-feed roller clutch gear engageable with said pre-feed roller drive gear and wherein rotary power delivered in a forward direction to said gears causes said clutch gear to engage with said pre-feed roller drive gear to rotate said pre-feed roller in a sheet delivery direction.

7. The roller bogie of claim 6, wherein said pre-feed roller clutch gear is mounted on an axle received in slots in said gear retainer and said one side plate, said slots having seats which are engaged by said axle to prevent over engagement of said clutch gear and said pre-feed roller drive gear.

8. The roller bogie of claim 7, wherein rotary power delivered in a reverse direction to said gears causes said clutch gear to disengage from said pre-feed roller drive gear.

9. The roller bogie of claim 8, wherein said pre-feed roller is connected by said gears to said separation roller such that said pre-feed roller is under driven in said forward direction at a surface speed slower than the surface speed of said separation roller.

10. The roller bogie of claim 9, further comprising a drag spring frictionally dragging between said side plate and said pre-feed roller to build up dwell.

11. The roller bogie of claim 10, further comprising mounting slots in said gear retainer and said one side plate, said clutch gear having axial supports received in said slots, said slots extending in a direction such that said clutch gear disengages from said pre-feed roller drive gear during rotation of said gears in a reverse direction and engages with said pre-feed roller drive gear during rotation of said gears in a forward direction.

12. The roller bogie of claim 11, wherein said slots are configured such that said clutch gear is continuously engaged with another one of said gears.

13. The roller bogie of claim 12, wherein said clutch gear has elastomeric teeth thereon.

14. The roller bogie of claim 9, further comprising at least one intermediate gear engaged with said separation roller drive gear and with said pre-feed roller clutch gear.

15. The roller bogie of claim 1, further comprising a stack damper pivotally mounted for rotation about the axis of rotation of said pre-feed roller, said stack damper having a surface which extends in the downstream direction of sheet movement from said pre-feed roller parallel to the surface of a stack of media sheets.

16. The roller bogie of claim 15, wherein said stack damper has a weight heavy enough to prevent buckling of thin media sheets, said stack stop being restrained in upward movement by said frame to impart a slight bend to thick media sheets during sheet movement imparted by said pre-feed roller.

17. A method of replacing sheet transport rollers in a sheet feeder comprising the steps of:

- a) providing a roller bogie having sheet transport rollers thereon,
- b) mounting said bogie on bogie support structure in a sheet feeder, said support structure including a latch for securely holding said bogie on said support structure;
- c) releasing said latch and removing said bogie from said sheet feeder apparatus;
- d) replacing said bogie with a new bogie; and
- e) closing said latch.

18. The method of claim 17, wherein said latch is released by depressing a release button to open a support aperture on said bogie support and inserting support structure on said bogie into said aperture and releasing said button to hold said bogie in operative position in said sheet feeder.

19. The method of claim 18, wherein said bogie is pivotally moveable in said support aperture with respect to said sheet feeder.

20. The method of claim 19, further comprising the step of moving said bogie and bogie support on said sheet feeder to expose said bogie for replacement.

21. The method of claim 20, wherein said bogie and bogie support are pivotally moved with respect to said sheet feeder to expose said bogie for replacement.

22. A sheet feeder having an input gear affixed to a shaft, said input gear being engageable with a motor driven output gear for transmitting bi-directional input power delivered by said motor driven output gear to at least one sheet feeder roller, a motion limiter having an arcuate surface mounted on said shaft proximate said input gear for engagement of said arcuate surface with a pivotal motor output gear support to prevent over engagement of teeth on said output gear and said input gear.

23. The sheet feeder of claim 22, wherein said motion limiter comprises an input gear retainer for retaining said input gear in desired axial position on said shaft.

24. The sheet feeder of claim 23, wherein said motion limiter is non-rotatably affixed to said shaft alongside said input gear.

25. The sheet feeder of claim 24, wherein said arcuate surface is cylindrical.